Ferroelectricity Newsletter

A quarterly update on what's happening in the field of ferroelectricity

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FOCUS ON APPLICATIONS OF POLAR DIELECTRICS

Almost a year ago, the **7th European Conference on Applications of Polar Dielectrics (ECAPD7)** was held at the Technical University of Liberec, Czech Republic. In this issue, we bring you a report of this conference by J. Nosek and J. Erhart, two members of the ECAPD7 organizing committee, and the title and authors of the 30 invited and 39 oral contributions, as well as of the 73 poster presentations. Since several fields of polar dielectrics are attracting particularly strong attention from industry and research laboratories, you might find the new ideas and approaches addressed at this conference of interest.

Three important international conferences, two in South America and one in Europe, will take place in September 2005. The first is the **11th International Meeting on Ferroelectricity (IMF11)** in Iguassú Falls, Brazil, from 5-9 September. You find details of this conference on page 18 in the Fall 2004 (Volume 12, Number 4) issue of the *Ferroelectricity Newsletter*.

This meeting will be followed by the **12th International Symposium on Electrets (ISE12)** to be held in Salvador, Bahia, Brazil, on 11-14 September. Please go to page 12 of this issue for more information.

The **10th International Conference on Ferroelectric Liquid Crystals** will take place in Stare Jablonski, Poland, from 12-17 September. (More on page 13.) The line-up of topics is impressive, as are the amenities of the hotel where the conference is held. According to the brochure, the surroundings abound in natural beauty, especially during the fall season. There is also a special item among the cultural events listed under "social activities." It is an excursion to a place in Frombork where Nicolas Copernicus (1473-1543), founder of modern astronomy, mathematician, and physician, lived.

On page 14 we list some of the new publications from the Materials Research Society. The topics include novel oxide/semiconductor interfaces; quantum dots, nanoparticles, and nanowires; amorphous and nanocrystalline metals; and thin films dealing with stresses and mechanical properties.

As always, go to the Calendar of Events for a concise overview of upcoming meetings.

Rudolf Panholzer
Editor-in-Chief

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CONFERENCE REPORT

7TH EUROPEAN CONFERENCE ON APPLICATIONS OF POLAR DIELECTRICS (ECAPD7)

The 7th European Conference on Applications of Polar Dielectrics (ECAPD7) has been hosted by the Technical University of Liberec, Czech Republic, on September 6-9, 2004 in Liberec. ECAPD conferences have been founded by Prof.P. Günter (ETHZ, Switzerland) with the first meeting held in Zürich, Switzerland, in 1988. Meetings in London, UK (1992), Bled, Slovenia (1996), Montreux, Switzerland (1998), Riga, Latvia (2000), and Aveiro, Portugal (2002) followed.

ECAPD7 attracted attention of 153 participants from 30 countries from Europe, America (Canada, USA, and Mexico) and Asia (China, Japan, Korea, and Singapore). Keynote lectures were presented in 4 plenary sessions by the outstanding researchers in the field – Prof. R. Blinc (University of Ljubliana, Slovenia), Prof. L. E. Cross (MRL Penn State University, USA), Prof. J. Fousek (Technical University of Liberec, Czech Republic) and Prof. P. Günter (ETHZ, Switzerland). Other participants presented 30 invited and 39 oral contributions in three parallel sessions and 73 posters in two poster sessions. Selected invited speakers (not only from Europe) gave the highest possible level of presentations and good overviews on polar dielectrics topics.

The mainly populated sessions included: dielectric spectroscopy, optical properties, thin films, domain, nanostructures and domain engineering, modeling and theory. Less attention has been paid to ceramics, including lead-free materials, polymers, and applications and devices. Topics on material issues possibly applicable for devices were covered in great extent; few presentations dealt with device applications.

The conference attracted attention of several companies —APC International, Ltd., Mackeyville, USA; Ferroperm Piezoceramics A/S, Danmark; Piezoceram, s.r.o., Librice, CZ; Fujitsu Laboratories Ltd., Japan; Mitsui Chemicals, Inc., Japan; Rainbow Photonics AG, Switzerland; aixACCT Systems GmbH, Germany – state agencies (Academy of Sciences from several countries; NUWC, USA) and a number of university laboratories.

Conference proceedings will be published as a special volume of *FERROELECTRICS*. CD-ROM with the conference papers will be delivered to the participants after it is published (expected time is about 8 months after the meeting). Profs. J.Erhart, J. Fousek and J.Nosek from the Technical University of Liberec, and J.Petzelt from the Institute of Physics, Academy of Sciences, Prague, have been assigned as guest editors. Organization of the next ECAPD8 meeting in 2006 has been granted to Prof. M.D. Fontana, University of Metz, France.

Social program included conference welcome party, banquet and trips to the local sightseeing places in Liberec – Jizera Mountains (artificial lake with the excursion into the dam facility), top of Jested Mountain (nature reservation, funicular railway facility, observation tower), Castle Sychrov and opera performance of G.Verdi: Nabucco in the Theatre of F.X.Salda in Liberec. A post-conference tour has been organized according to the participants'selection to Prague or to the nature reservation "Bohemian Paradise." Bus transportation was organized from Prague International Airport to Liberec and back for the participants'convenience.

Finally, we would like to highly acknowledge the support from all conference sponsors, especially from EU Thematic Network program POLECER, Taylor and Francis Publishers, and Office of Naval Research International Field Office. Our thanks go also to all members of the local organizing committee for their help with meeting organization, especially to L. Burianová, J. Drábková, V. Drozdová, A. Engová, J. Fousek, L. Machonsky, Z. Plíva and M. Sulc. Their work contributed not only to the scientific exchange but also to personal contacts among the participants.

J. Nosek and J. Erhart
ECAPD7 Organizing Committee

ECAPD7 PAPERS

PLENARY SESSION

Strain gradient induced electric polarization in paraelectric, ferroelectric and relaxor
L.R. Cross, Wenhui Ma, and Wenyi Zhu

Photorefractive materials for near infrared applications
P. Günter, G. Montemezzani, D. Haertle, M. Jazbinsek, and A.A. Grabar

Polar nanoclusters in relaxors
R. Blinc, B. Zalar, V. Laguta, and R. Pirc

Technical applications of open domain-related problems
J. Fousec

THIN FILMS

Piezoelectric films and their applications in microsystems
Paul Muralt

FRAM capacitor and reliability technology
J.S. Cross

Pyroelectric arrays using ceramics and thin films
R.W. Whatmore

Size effects in ultra-thin epitaxial ferroelectric heterostructures
V. Nagarajan and R. Waser

Ferroelectric films for electronic device applications
W. Zhu, X.F.Chen, Z.H. Wang, and O.K. Tan

Epitaxial films of relaxor ferroelectric $PbMg_{1/3}Nb_{2/3}O_3$ in strong electric fields
M. Tjunina and J. Levoska

Infrared study and preparation of KTN thin films
V. Zelezny, J. Bursik, and P. Vanek

Lead excess in self-polarized PZT thin films deposited by reactive sputtering at low temperatures
G. Suchaneck, A. Deyneka, L. Jastrabik, and G. Gerlach

Storage and erasure of optical information in Pt-PZT-SnO_2 thin film structures
P.V. Afanasiev, D. Yu. Bulat, A.V. Pankrashkin, P. Pronin, G. Suchaneck, and G. Gerlach

Dielectric properties of lead titanate thin ferroelectric films depending on obtaining conditions
A.S. Sidorkin, L.P. Nesterenko, I.A. Bocharova, G.L. Smirnov, and S.V. Ryabsev

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$LiNbO_3$ optical waveguide devices: Study of the physical phenomena causing the DC drift
M.D. Fontana, L. Guilbert, J.P. Salvestrini, S. Gille, R. Radouani, Y. Zhang, and P. Bourson

Electromechanical and electro-optical properties of nonferroelectric polar bismuth triborate, BiB_3O_6
L. Bohaty and P. Becker

Optical properties of bismuth triborate (BiBO) single crystal
D. Kasprowicz, J. Kroupa, A. Majchrowski, E. Michalski, and M. Drozdowski

Optical uses of ferroelectric crystals with 180˚ domains
R.S. Cudney

Laser intensity modulation method (LIMM): Experimental techniques, data analysis and applications
S.B. Lang

Growth of nonlinear optical DAST crystals for terahertz generation and elecctro-optics
C. Medrano, B. Ruiz, and P. Günter

Spectrum of terahertz pulses from organic DAST crystals
Arno Schneider and Peter Günter

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Processing and field induced transition of PZST ceramics
Yao Xi and Zhang Liangying

Bi-pyrochlore dielectric ceramics for microwave applications: Current status and future prospects
Hong Wang and Xi Yao

Grain orientation and electrical properties of some bismuth layer-structured ferroelectrics for lead-free piezoelectric applications
T. Takenaka and H. Nagata

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Broad-band dielectric spectroscopy of relaxor ferroelectric
E. Buixaderas, M. Kempa, S. Veljko, M. Savinov, S. Kamba, and J. Petzelt

Dielectric properties of new relaxors PMN-PSN-PZN ceramics

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J. Banys, J. Macutkevic, J. Grigas, A. Brilingas, K. Bormanis, and A. Stenberg

Dielectric relaxation in doped $SrTiO_3$ in the regimes of classical thermal activation and of quantum tunneling
V.V. Lemanov

Infrared and high-frequency dielectric behaviour and soft modes in ferroelectric and relaxor films
J. Petzelt, T. Ostapchuk, A. Pashkin, M. Kempa, and S. Kamba

Soft mode and central-mode behaviour in thin films of $PbMg_{1/3}Nb_{2/3}O_3$ and $PbSc_{1/2}Ta_{1/2}O_3$ relaxor ferroelectrics
S. Kamba, M. Kempa, J. Petzelt, K. Brinkman, and N. Setter

Nano-scale frustrated ferroics
N.N. Kolpakova, P. Czarnecki, W. Nawrocik, M.P. Shcheglov, and L. Szczepanska

Off-center ion displacements and the phase transition in perovskite ferroelectrics
R. Pirc and R. Blinc

Raman scattering investigation of the lead barium niobate phase diagram
A.P. Ayala, J.J. Lima-Silva, J. Mendes Filho, D. Garcia, and J.A. Eiras

Lattice dynamics and polar studies in $(Sr_{1-1.5x}La_x)TiO_3$ ceramics
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Intrinsic local modes and heterogeneity in relaxor ferroelectrics
A. Bussmann-Holder and A.R. Bishop

Investigation of acoustoelectric phenomena in $Sn_2P_2(Se_{0.28}S_{0.72})_6$ single crystals
V. Samulionis, J. Banys, and Yu. Vysochanskii

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Enhanced piezoelectric properties of potassium niobate single crystals by domain engineering
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Novel physical effects in dielectric superlattice
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Micro and nanodomain engineering in lithium niobate and lithium tantalate
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Ferro-nano-optics: Dielectric, polarization, and optical properties in ferroelectric domains and domain walls
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A.L. Kholkin, V.V. Shvartsman, I.K. Bdikin, and S.V. Vakhrushev

Piezoresponse force microscopy of domain structures in ferroelectric $Pb(Mg_{1/3}Nb_{2/3}O_3$-$PbTiO_3$ single crystals
Q.R. Yin, H.R. Zeng, H.F. Yu, G.R. Li, and H.S. Luo

Dielectric properties of ferroelectrics in restricted geometries: Nanotubes, nano-rods, ribbon structures, and shoulders on [3D] capacitor
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Properties of lead-free piezoceramics based on alkali niobates
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Spark plasma sintering of $(Ba,Sr)TiO_3$ nano-powders
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Structural order and dielectric behaviour of hydroxyapatite
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Effect of spontaneous polarization screening on dielectric response of ferroelectric polydomain films
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Internal bias field effects and polarization imprint in ferroelectric films
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A.J. Bell and R. Kurchania

Databases of ferroic phase transitions
V. Janovec, P.E. Tomaszewski, L. Richterowá, J. Fábry, and Z. Kluiber

Equivalent circuit modelling of the time-dependent poling behaviour of ferroelectric multilayer structures
C. Pientschke, R. Steinhausen, A. Kouvatov, H.T. Langhammer, and H. Beige

Ferroic layer composites: The effective properties and possible instability of the domain structure
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Distributions of electric and elastic fields at 90˚ domain boundaries in ferroelectric thin layer — Various configurations
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Anomalous power law dispersions in AC conductivity and permittivity shown to be characteristics of microstructural electrical networks
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Functionalization of ferroelectric polymers
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Elasticity control of curved piezoelectric polymer films
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Annealing of storage influence on pyroelectricity of ferroelectric PVDF and P(VDF-TrFE) copolymer
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Measurement of hysteretic losses exhibited by a family of fluoropolymer films
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Surface effect on electrical and optical properties of $BaTiO_3$ at room temperature
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Notable anomalies of the 403K phase transition observed in etched $BaTiO_3$ single crystals
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Defect dipoles and internal bias field in glycine phosphate doped glycine phosphite crystals
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Non ergodicity in low temperature phases of glycine phosphite and betaine phosphite
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Improper ferroelastic phase transition and its interrelation with ferroelectric transition in (1-x) $SrTiO_3$ - x $ATiO_3$ (A=Ba, Pb)
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Dynamic nanoscale inhomogeneties due to the charge localization in relaxors
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Linear electrostatic micromotor on the basis of ferroelectric ceramics
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A high-power piezoelectric transformer using in DC/DC converters
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Pulse driving of piezoceramic actuators and their present technical limitations
A. Richter, P. Rydlo, M. Pustka, and M. Kolár

Novel tweezers for biological cells using piezoelectric polylactic acid fibers
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Mass-loading influence on piezoelectric resonators characteristics
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Dielectric and piezoelectric properties of $Sn_2P_2S_6$ single crystals
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Orientation control of low temperature deposted sol-gel PZT52/48 films
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Anomalous broad dielectric relaxation in mixed $CuInP_2(S_xSe_{1-x})_6$ crystals with x=0.4-0.8
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Effect of quantum fluctuations and of isotopes on Curie temperature in $BaTiO_3$, $PbTiO_3$ and $KNbO_3$
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Microstructural investigation of complex doped Pt-type ceramics
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Seeding effect in SBN thin films
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Angular correlation of deflected beams intensity at single domain wall of GPI crystal
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Conceivable engineered domain configurations of monoclinic m-phases in relaxor PZN-Pt crystals
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Elastic stiffness constants of PZN-4.5%Pt single crystal influenced by DC bias electric field applied at various directions to prototypic crystal symmetry
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Cole-Cole analysis of a new lead free ferroelectric relaxor
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Computer modeling and simulation of thickness mode piezoelectric transducers under different driving conditions
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Space charge and polarization in crosslinked polyethylene
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Ferroelectric transition in $KTaO_3$ induced by large size isovalent impurities: $KTaO_3$:Rb (3% at)
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Low temperature Raman spectra of PMN-xPt around the morphotropic phase boundary
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Broad-band dielectric spectroscopy of PZN-8%Pt single crystal
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Atomistic structure of ferroelectric domain walls in perovskite crystals — A topological approach
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$Ba(Ti_{0.68}Zr_{0.32})O_3$ films and $Ba(Ti_{0.68}Zr_{0.32})O_3/BaTiO_3$ superlattices: X-ray diffraction, dielectric and Raman study
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Integrated optical filter using periodic non-180° domains in ferroelectric single crystal
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Sol-gel synthesis of PMN from Nb-ethyleneglycoltartaric complex
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Aging and memory in PLZT above the polar freezing temperature
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Origin of the low-temperature phase in $SrTiO_3$
A. Levstik, C. Filipic, R. Pirc, V. Bobnar, R. Blinc, and M. Itoh

Induced phase transition and dielectric studies in Pr-doped $SrTiO_3$ solid solutions
A. Durán, J. Mata, E. Martínez, and J. Siqueiros

Characterization of polar axis of a ferroelectric crystal from thermal expansion
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Evolution of strain and dielectric properties in $Ba_{1-x}Sr_xTiO_3$ epitaxial thin-film heterostructures
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The influence of thermal treatments and illuminations on the EPR spectra of copper centres in potassium tantalate single crystal
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$Sn_2P_2S_6$ crystals for fast near-infrared photorefraction
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Electrical characterization of ferroelectric $SrBi_2Nb_2O_9$ single crystals grown from high temperature self-flux solution
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PZT ceramics prepared from mechanically activated precursor
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Relaxation processes in dielectric and electro-mechanical response of PZT thin films under nano-indentation
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Compositional evolution of properties in epitaxial films of relaxor $PbMg_{1/3}Nb_{2/3}O_3$ - $PbTiO_3$
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The influence of the re-poling in the weak electriccal field on electromechanical properties of PZT ceramics
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Dielectric studies of the polyampholyte hydrogels
I.A. Malyshkina, P. Pissis, and G. Polizos

$PbTiO_3$ ceramics obtained by sol-gel processing and utilising ultrasounds
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Structural and ferroelectric properties of textured PST thin films grown on epitaxial LSCO electrodes
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Effect of PZT substitution to barium titanate ceramics on the dielectric and piezoelectric properties of mixed compounds
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SFM and EFM studies on a clay-based dielectric nanocomposite
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Far infrared and Raman spectroscopy of $BaTiO_3$ thin films and nanocrystalline ceramics
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Contribution to the measurement constants on domain-engineered ferroelectric crystals
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Temperature dependencies of piezoelectric coefficients of L-alanine doped TGS crystals
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Orientation control of $(Bi,La)_4Ti_3O_{12}$ thin films derived by sol-gel method
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Laser interferometric displacement measurements of multi-layer actuators and PZT ceramics
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Orientation of compatible domain walls in terms of lattice parameters
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Ferroelectric hysteresis and aging in ferroelectromagnetic PFN ceramics
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Microelectronic thermobiosensors
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Evolution from ferroelectric to relaxor behaviour in the $(1-x)BaTiO_3 - xLa(Mg_{1/2}Ti_{1/2})O_3$ system
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Far infrared spectroscopy of $SrTi_2O_3$ /$BaTiO_3$ superlattices
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Nonlinear dielectric permittivity and nature of the phase transitions in diluted $KTaO_3$:Nb
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Dielectric characterization of mineral oil in transformers isolation
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Differential LIMM technique for measurement of thermal diffusity
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Broad-band dielectric response of new relaxor ferroelectric system $Ba_2LnTi_2Nb_3O_{15}$ (Ln=La, Nd)
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Ferroelectric properties of mechanochemically synthesized nanosized barium titanate
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Correlation between densification rate and microstructure evolution of mechanically activated $BaTiO_3$
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Measurements of piezoelectric properties of ferroelectric thick films by fotonic sensor
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UPCOMING MEETINGS

16th American Conference on Crystal Growth & Epitaxy (ACCGE-16)
10-15 July 2005

and

12th US Biennial Workshop on Organometallic Vapor Phase Epitaxy(OMVPE-12)
10-14 July 2005
Big Sky Resort and Convention Center, Big Sky, Montana, USA

Following the very successful merging of these two crystal growth meetings in 2003, we are pleased to announce that the joint format will continue in 2005 at the spectacular Big Sky Resort in Montana. The meeting will consist of four parallel sessions, three for ACCGE and one for OMVPE. A single registration fee will give attendees access to both meetings. A combined ACCGE/OMVPE vendor exhibit will showcase the latest in crystal growth and related products.

ACCGE-16 (10-15 July 2005)

The Sixteenth American Conference on Crystal Growth and Epitaxy (ACCGE-16) will provide a forum for the presentation and discussion of recent research and development activities in all aspects of bulk crystal growth and epitaxial thin film growth, with sessions integrating fundamentals, experimental and industrial growth processes, characterization, and applications. In addition to the focused sessions listed below, other sessions may be organized upon topical distribution of contributed papers. The conference will include both oral and poster sessions, as well as plenary and invited speakers, to provide a broad picture of developments in the field. The meeting will focus on a wide range of crystal growth science issues.

Focused Sessions

- Biocrystallization
- Bulk crystal growth
- Characterization
- Correlated electron crystals
- Crystal growth for beginners (a tutorial session)
- Crystal growth for lasers and NLO
- Crystal growth fundamentals
- Growth of quantum dots, wires, and other 4D nanocrystals
- Growth of crystalline silicon and other photovoltaic materials
- Industrial crystallization
- Novel materials
- Oxides films: ferroelectrics, dielectrics and beyond
- Wide bandgap bulk and epitaxial growth

OMVPE-12 (10-14 July 2005)

This workshop continues a tradition first started in Cornell in 1983, bringing together OMVPE specialists from industry, academia, and government laboratories in an informal atmosphere and scenic surroundings. The OMVPE workshop is an excellent opportunity to present and discuss new results, as well as providing a venue for recent entrants to familiarize themselves with the latest OMVPE science and technology. The format of the conference is designed to maximize interaction amongst OMVPE specialists, and within the context of a wider crystal growth community represented at the ACCGE.

UPCOMING MEETINGS

Topics

- OMVPE growth of novel nanostructures and materials
- III/V nitrides, other wide gap materials, and devices
- III/V phosphides, arsenides, and antimonides
- Quantum dots, wires, and other nanocrystals
- Selective and nonplanar growth
- OMVPE surface and reaction chemistry
- Simulation and modeling of growth processes
- Doping issues in III/V materials
- Relationship between epitaxy and device physics
- Production and process safety issues
- Role of OMVPE in emerging markets for epitaxial materials

Industrial Exhibit

An exhibit of apparatus, materials, and services of interest to the crystal growth community will be held in a room close to the technical sessions. This will also be the site of coffee breaks and the continental breakfasts. Vendors interested in contracting space should contact

Gordon Banish, Cyberstar, email: CyberstarAmerica@aol.com

or

Robert Biefeld, Sandia National Laboratory, email: rmbiefe@sandia.gov

Publication of Proceedings

The proceedings of ACCGE-16 and OMVPE-12 will be published in a special volume of the *Journal of Crystal Growth*. Authors of papers accepted for poster or oral presentation are invited to submit manuscripts comprising five or fewer journal pages of material for consideration for publication.

Contact

Laura Bonner, ACCGE Executive Administrator, 25 4th Street, Somerville, NJ 08876 USA
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12th International Symposium on Electrets (ISE12)
11-14 September 2005
Salvador, Bahia, Brazil

The Organizing Committee of the 12th International Symposium on Electrets cordially invites you to attend the symposium to be held in Salvador, Bahia, Brazil, on 11-14 September 2005. ISE12 will include the Bernhard Gross Memorial Lecture and the Dilip Das-Gupta Memorial Award. The conditions governing the Gross Memorial Lecture and the Das-Gupta Memorial Award can be found on the ISE12 Web site.
We also encourage delegates to participate in the **11th International Meeting on Ferroelectricity (IMF11)** to be held in Iguassu Falls, Brazil, from 5-9 September 2005.

http://www.ifasc.usp.br/-ise12/

UPCOMING MEETINGS

10th International Conference on Ferroelectric Liquid Crystals
12-17 September 2005
Stare Jablonski, Poland

The conference will be organized by the LC groups from the Institute of Applied Physics and the Institute of Chemistry, Military University of Technology, Warsaw, Poland.

Topics

- Synthesis, design,and properties of new materials
- Banana shaped and achiral switchable systems
- Novel tilted smectic phases (ferri-, antiferro-, TGB, de Vries SmA, etc.)
- V shaped switching
- Surface interactions and alignments
- Theory and modeling of the chiral smectic phases
- Linear, nonlinear, and electro-optical properties
- Display technologies: Addressing, switching, alignment
- Nondisplay applications: Switching, data processing, telecommunication

Tutorial seminars will take place on Monday, 12 September. Three poster sessions are planned for the late afternoon of Tuesday, Wednesday, and Friday.

Location

The conference will be held in the three-stars hotel "Anders" (http://www.hotelanders.com.pl) in Stare Jablonski (200 km from Warsaw, 130 km from Gdañsk). This hotel is locateed among beautiful lakes and forests of Warmia, a region in the northern part of Poland. This place is particularly beautiful in autumn.
All single and double rooms are equipped with TV-Sat, radio, phone, and bathroom with shower. It is possible to use Internet via phone line. A gym, swimming pool, sauna, etc., are available for hotel guests. The hotel has got some rooms prepared for handicapped people.
The restaurant "Anders" serves dishes of European and traditional Polish cuisine, as well as vegetarian meals. During the conference three meals a day will be served for all participants.
Shuttle busses from and to Ilawa railway station are planned for participants who will use the railway. These busses will be free of charge. Express trains from Warsaw or from Gdañsk arrive every hour; (for the time table please visit http://www.pkp.com.pl).

Contact

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htpp://www.wat.edu.pl/023/FLC.main.html

PUBLICATIONS

NEW VOLUMES FROM THE MATERIALS RESEARCH SOCIETY

Fundamentals of Novel Oxide/Semiconductor Interfaces

The interfaces between oxides and semiconductors are important to a number of emerging technologies and are becoming all the more critical as devices scale into the nanometer regime. Concurrent with the advances in incorporating new gate dielectrics in traditional silicon technology, ferroelectric/semiconductor interfaces for novel sensors and oxide/compound semiconductor interfaces for field-effect transistors are being considered. Topics include fundamentals of the oxide/semiconductor interface; characterization of dielectrics on silicon; high-k dielectrics on silicon; high-k oxides, metal gates and integration; and novel oxides for compound semiconductor electronics.
This is Volume 786 from the MRS Symposium Proceedings Series and contains 58 papers , 408 pages (ISBN: 1-55899-724-5). It is available in hardcover for $83.00 (MRS member), $91.00 (U.S. list), and $105.00 (non-U.S.). This volume is also available electronically on the MRS Web site, with free access for all current MRS members.

Thin Films—Stresses and Mechanical Properties X

Understanding the mechanical behavior of thin films is crucial for a wide variety of technologies, including semiconductor devices and packaging (i.e., advanced interconnects, dielectrics and silicides), information storage media, optical films, hard coatings, micro- and nanoelectromechanical systems (MEMS and NEMS), and biomedical devices. Topics include stress evolution; modeling stresses and film instability; deformation and adhesion; film fracture and fatigue; processing and structure; indentation testing; mechanical properties; properties and performance; and multilayers and nanolaminates.
This is Volume 795 from the MRS Symposium Proceedings Series and contains 91 papers , 583 pages (ISBN: 1-55899-733-4). It is available in hardcover for $92.00 (MRS member), $101.00 (U.S. list), and $116.00 (non-U.S.). This volume is also available electronically on the MRS Web site, with free access for all current MRS members.

Quantum Dots, Nanoparticles and Nanowires

Nanostructures of semiconductors and metals show novel optical and transporrt properties. Semiconductor quantum dots, for example, show striking size-dependent optical and electronic properties when their dimensions become comparable to, or smaller than, the Bohr exciton radius, due to quantum confinement of the charge carriers. Topics include synthesis and characterization of semiconductor quantum dots, nanoparticles and nanowires using wet chemistry and molecular beam approches; synthesis, characterization and self-assembled quantum dots; nanoscale devices and sensors based on nanostructures and their properties; and design and characterization of quantum dot-bioconjugates and their use in assay developments.
This is Volume 789 from the MRS Symposium Proceedings Series and contains 63 papers , 429 pages (ISBN: 1-55899-727-X). It is available in hardcover for $98.00 (MRS member), $108.00 (U.S. list), and $124.00 (non-U.S.). This volume is also available electronically on the MRS Web site, with free access for all current MRS members.

Amorphous and Nanocrystalline Metals

Progress for these advanced materials depends crucially on the development of new fabrication and processing techniques, as well as on a fundamental understanding of the relationship between the structure and properties. Because the atomic-scale structure of high-angle grain boundaries is highly disordered, it is reasonable to expect that as the grain size becomes very small, the properties of nanocrystalline metals might approach those of metallic glasses. Common ground can also be found in processing. For example, nanocrystalline phases can be produced by devitrification of metallic glasses.
This is Volume 806 from the MRS Symposium Proceedings Series and contains 58 papers , 416 pages (ISBN: 1-55899-744-X). It is available in hardcover for $86.00 (MRS member), $95.00 (U.S. list), and $109.00 (non-U.S.). This volume is also available electronically on the MRS Web site, with free access for all current MRS members.

www.mrs.org/books/

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Ferroelectricity Newsletter

including all back issues is available on Internet

http://www.sp.nps.navy.mil/projects/ferro/ferro.html

in Adobe Acrobat PDF file format

The PDF file format maintains the graphics and organization of the printed newsletter. Adobe Acrobat Reader is a helper application distributed free for Web browsers. Acrobat is available for Macintosh, Windows, DOS, SGI, and Sun SPARC operating systems.

If you want a hard copy of the newsletter, please let us know by

email: rpanholzer@nps.navy.mil

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CALENDAR OF EVENTS 2005

Sep 5-9	•	11th International Meeting on Ferroelectricity (IMF-11), Cataratas del Iguazú, Foz do Iguaçu, Argentina-Brazil Border (see *Ferroelectricity Newsletter,* Vol. 12 No. 4, p. 18)
Sep 11-14	•	12th International Symposium on Electrets (ISE12), Salvador, Bahia, Brazil (see p.12)
Sep 12-17	•	10th International Conference on Ferroelectric Liquid Crystals, Stare Jablonski, Poland (see p.13)